**REMARKS**

The Office Action dated October 28, 2004, was carefully reviewed. The Examiner rejected claims 1-8 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,741,847 to Claxton et al., hereinafter Claxton. Claims 1, 3, and 6 are amended herein and claims 1-8 remain in the application.

The present invention is a tunable bandpass filter that passes desired frequency channels and suppresses undesired frequency channels. The present invention processes RF analog signals, and passes only desired signals, which is less than an entire frequency band. The filter outputs, meaning the processed desired signals, are combined to form one signal for digitization. The present invention allows more than one user to receive different channels at the same time. Furthermore, the present invention suppresses undesired signals so that they don't overload the receiver.

The present invention requires summing only the desired signals filtered from the entire frequency band into one-summed signals. Independent claim 1 requires "a summer for summing said multiple desired signals into one summed signal". Each of the desired signals is defined by tuning a tunable bandpass filter to the desired frequency. Likewise, independent claim 6 requires filtering the analog signal into a predetermined number of desired frequencies and then combining only the desired frequencies into a single combined analog signal.

The Claxton reference does not require summing only desired signals. The Claxton reference downconverts all high frequency signals, including desired and undesired signals, to an intermediate frequency, or baseband signal. The frequency down-converter requires a mixer, a band-pass filter, and an attenuator that are tuned to provide the desired frequency down-conversion and amplitude control. The frequency down-converter generates an intermediate frequency signal or an intermediate frequency signal and then a baseband signal in a two-step down-conversion process. Column 5, lines 29-52 describe a band block down converter, digitalized IF and digital filters. This requires a down converter 18, a synthesizer 48, a mixer 28, a frequency multiplier 48 and a frequency divider 74. The present invention does not require any of these.

The Claxton reference describes a method that combines separate signals into a single, generally continuous composite band thereby eliminating the wide frequency gap between signals. However, the translation requires mixing and filtering the different signals, including an intermediate frequency (IF) signal, and a local oscillator for each signal. The Claxton reference divides at least one entire band into portions that are overlapped which further reduces the bandwidth. So although one ADC may be used, there is additional hardware required for each signal and it does not reduce the overall complexity and cost associated with multiple ADC's.

The LNA, the frequency down-converter, the ADC and the digital channelizer of Claxton are all specialized components that pass a relatively wide frequency band. The LNA is optimized for a particular whole frequency band, the amplified signal from the LNA is applied to a mixer along with an LO signal from the amplifier to downconvert the received signal to a lower frequency. The LO signal is generated by a reference source and tuned out by a synthesizer to a particular center frequency. The output of the mixer is an IF signal suitable for subsequent digital signal processing. Then the IF signal is bandpass limited by the BPF to a particular whole frequency band and converted into a form suitable for the ADC.. The ADC is applied to a digital channelizer and the channelizer separates all of the received signals in the frequency band, not just the desired, or filtered, signals, across the wide bandwidth into the separate signals for digital processing.

Regarding the Examiner's comments to claims 1 and 6 directed at column 3, lines 10-13 and lines 39-47; the channelizer in Claxton is in digital IF domain. The present invention is at analog RF tunable filters and digital RF digital channel filters. The Claxton reference is a down-converted IF signals and a digitized IF signal process. The present invention is not down-converted. The Claxton reference has no undesired signal-absorbing feature as does the present invention. The Claxton reference passes the whole desired band that includes many desired and undesired frequencies. The present invention allows only desired frequencies to pass.

As discussed above, the Claxton reference requires a down-converter, digitalized IF and digital filters, synthesizer, mixer, frequency multiplier, and a frequency divider. The present invention does not require any of this.

At column 9, lines 4-29, the Claxton reference is describing a typical analog-to-digital converter that is well known in the art. Claxton teaches a summing signal 180 at digital IF sampling signal. The present invention uses multiple individual channel frequency filters, and then sums them into one line signal at the analog RF level.

At column 11, lines 34-47, Claxton is processing the signals at an Intermediate Frequency (IF) and the present invention processes at RF.

Regarding claims 2 and 7, the Examiner points to column 2, lines 13-27, which describes processing at down-converted IF signals. These signals are well controlled IF signals, and use the whole band pass filter. Claxton does not teach or disclose protection of the in-band channels intermodulaton using tunable bandpass filters that are tuned to a desired frequency.

Regarding claim 3, Claxton does not disclose a tunable bandpass filter. The Claxton reference teaches a wide bandwidth band limited filter, that processes IF signals. The present invention has multiple individual frequency filters that are summed into one line signal at the analog RF level.

Regarding claim 4, the Examiner points to column 7, lines 23-33, which describe a standard practice in high frequency amplifier design. Claxton is using RC and C1 to form a simple RC low pass filter, and not a band pass filter, to stabilize the amplifier 82.

The Claxton reference does not teach or disclose receiving less than all of the frequencies in a frequency band by receiving only at least two desired frequencies, summing only the desired frequencies of the RF signal into a summed signal and digitizing the summed signal that is received by a tuner capable of simultaneously processing the multiple desired signals from the digitized signal as claimed in independent claims 1 and 6 of the present invention. This is significantly different from Claxton in that Claxton does not teach receiving less than all of the signals in the frequency band, Claxton does not teach summing the frequencies, and therefore Claxton cannot possibly teach or disclose summing less than all of the frequencies by summing only the received, or desired, frequencies as taught in the present invention.

Regarding claims 5 and 8, the Examiner points to cols. 1-2, lines 64-10 and col. 3, lines 25-47. This is again describing the down converter's function as a wide bandwidth band limited filter. This system has no RF single desired tuned frequency filter and has no individual tunable filter tuned to undesired frequencies to absorb undesired signals. The present invention uses multiple individual frequency filters, then sums them into one line signal at the analog RF level.

The Claxton reference does not teach or disclose summing the signals, nor does it teach or disclose summing only desired signals filtered from the frequency band. Where the present invention uses tunable bandpass filters to select desired frequencies, and then sums only those desired frequencies, the

Claxton reference receives all of the signals in a frequency band. The present invention sums less than all of the signals in the frequency band and then digitizes only the selected signals which minimizes intermodulation and desensitization at the ADC input. Claxton discloses receiving all of the signals, introducing an intermediate frequency, mixing all the signals, digitizing all the signals, and then filtering all the signals through a channelizer to separate them into individual frequencies. The Examiner points to column 9, lines 4-13 of the Claxton reference to identify a summer and summing multiple desired frequencies into one summed signal. However, the summer 180 disclosed in the Claxton reference is a summation device 180 that receives the analog signal from the downconverter and a negative feedback signal from the digital output of a modulator. It produces an analog difference signal to compensate for error in the digital output of the modulator.

Regarding claim 8, the present invention requires receiving a first desired frequency receiving a second undesired frequency and adjusting an automatic gain control for the undesired frequency to absorb the undesired signal.

The Examiner points to columns 1 and 2, lines 64-10 of Claxton as disclosing the features of applicant's independent claim 8, but that selection of Claxton does not teach or disclose absorbing "undesired" frequencies and in fact, Claxton teaches being "insensitive" to potential cross-channel interference. Being insensitive to interference implies rejecting interference, it

does not teach or suggest receiving an undesired frequency as claimed in claim 8 of the present invention. The present invention welcomes, and actually receives the undesired signal in order to absorb it and eliminate it as an RF signal before it reaches the ADC and the digital processing of the desired signal as claimed in independent claim 8. In Claxton, the down-converter is a wide bandwidth band limited filter and has no capability to tune to a single RF desired frequency or undesired frequency.

The Examiner also points to column 3, lines 25-47. However, Claxton discloses passing signals that are in a particular receive frequency band of interest. Claxton passes an entire band. The present invention uses multiple individual frequency filters and sums them into one line signal at analog RF level. Claxton does not teach or disclose receiving only a "desired" signal and an "undesired" signal in order to absorb the "undesired" signals as claimed in independent claim 8 of the present invention.

The Examiner also points to column 7, lines 23-33 and lines 49-54, where impedance matching networks are discussed. However, it is respectfully asserted that Claxton introduces the impedance matching networks to reduce noise in the amplifiers. Here the Claxton reference is describing how to form a simple RC low pass filter and not a band pass filter to stabilize the amplifiers 82. Claxton does not disclose receiving both a desired signal and an undesired signal and adjusting an automatic gain control to a minimum gain to absorb the undesired signal at RF and digitize only the desired signal as claimed in claim 8 of the present invention.

The Claxton reference has no undesired signal-absorbing feature. Further, the Claxton reference passes a whole frequency band signal, which has many desired and undesired frequencies. The present invention only allows desired frequencies to pass, not the whole band of signals.

It is respectfully requested the Examiner withdraw the rejection of claims 1-8 under 35 U.S.C. § 102. Should the Examiner have any questions or comments that may place the application in better condition for allowance, he is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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